Graphing Linear Equations

Linear equation are named as such because if we were to plot ALL of the solutions to a linear equation (remember, there are an INFINITE number of solutions to a linear equation!), the points would form a line.

The graph of a linear equation is a straight line.
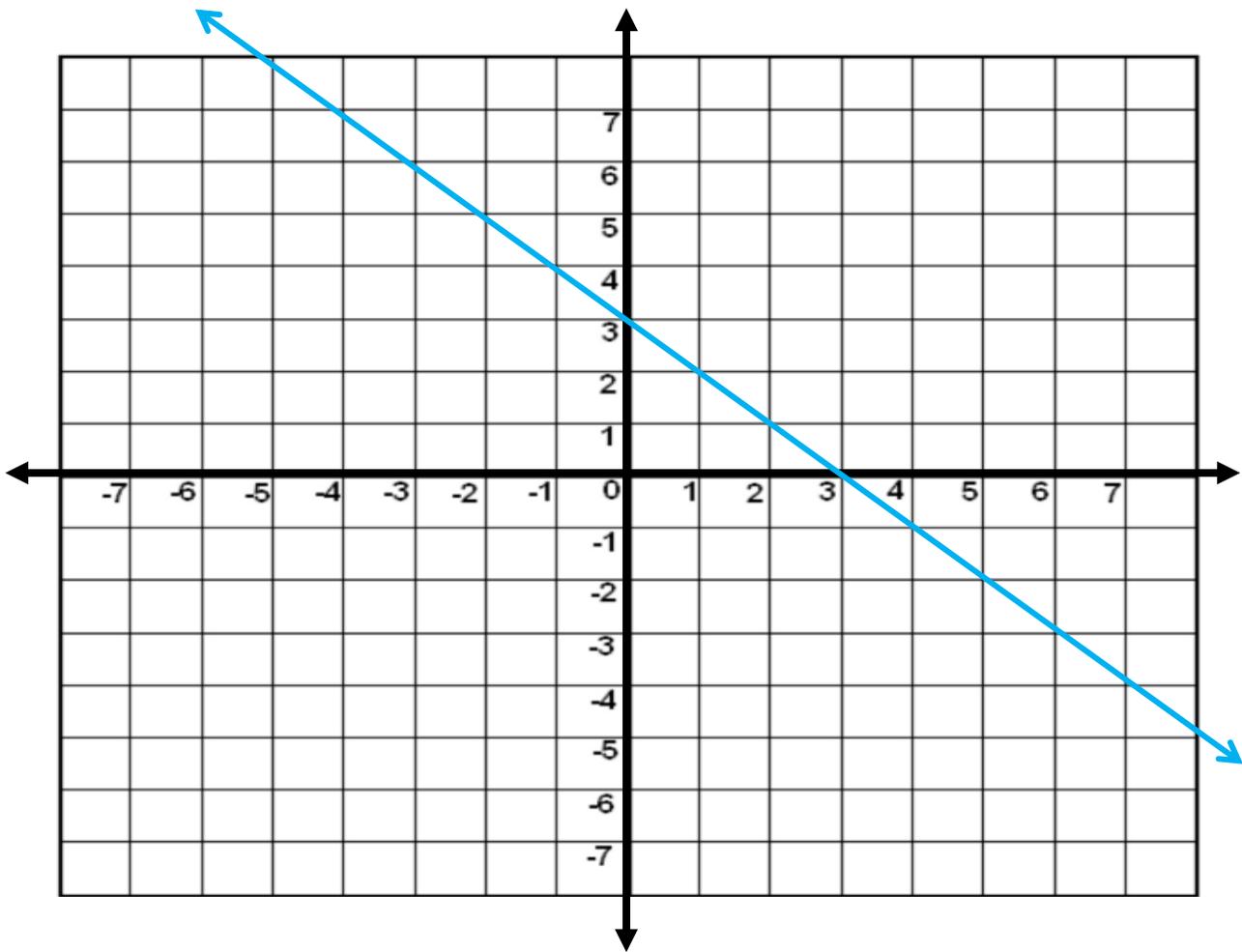
Example 1:

Graph the equation:

$$x + y = 3$$

We start out by making a chart. We will choose any number for x and then find its corresponding $y\ value$.

x	y
3	
0	
-2	

NOTE: Always find at least 3 points when graphing linear equations.

Now we plot these three points and connect the dots to form a line.

Every point that lies on this line is a solution to the equation $x + y = 3$.

Consider the line above. The point $(3,0)$ is the **x-intercept** since that is the point where the line intersects the x-axis. The point $(0,3)$ is the **y-intercept**, since that is the point where the line intersects the y-axis.

One method of graphing linear equations is to find the x and y intercepts.

To find the x-intercept, plug in zero for y and solve for x.
To find the y-intercept, plug in zero for x and solve for y.

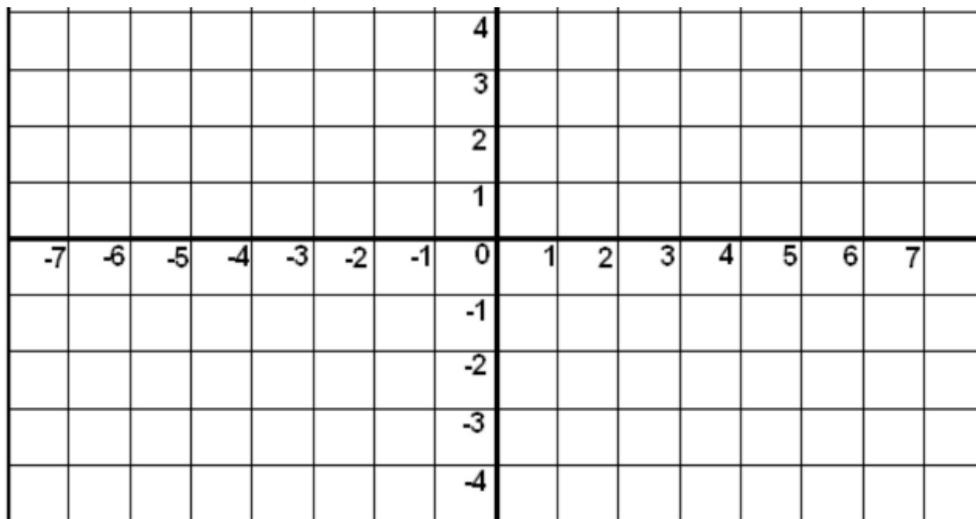Consider the graph of $-2x + y = 2$ below.
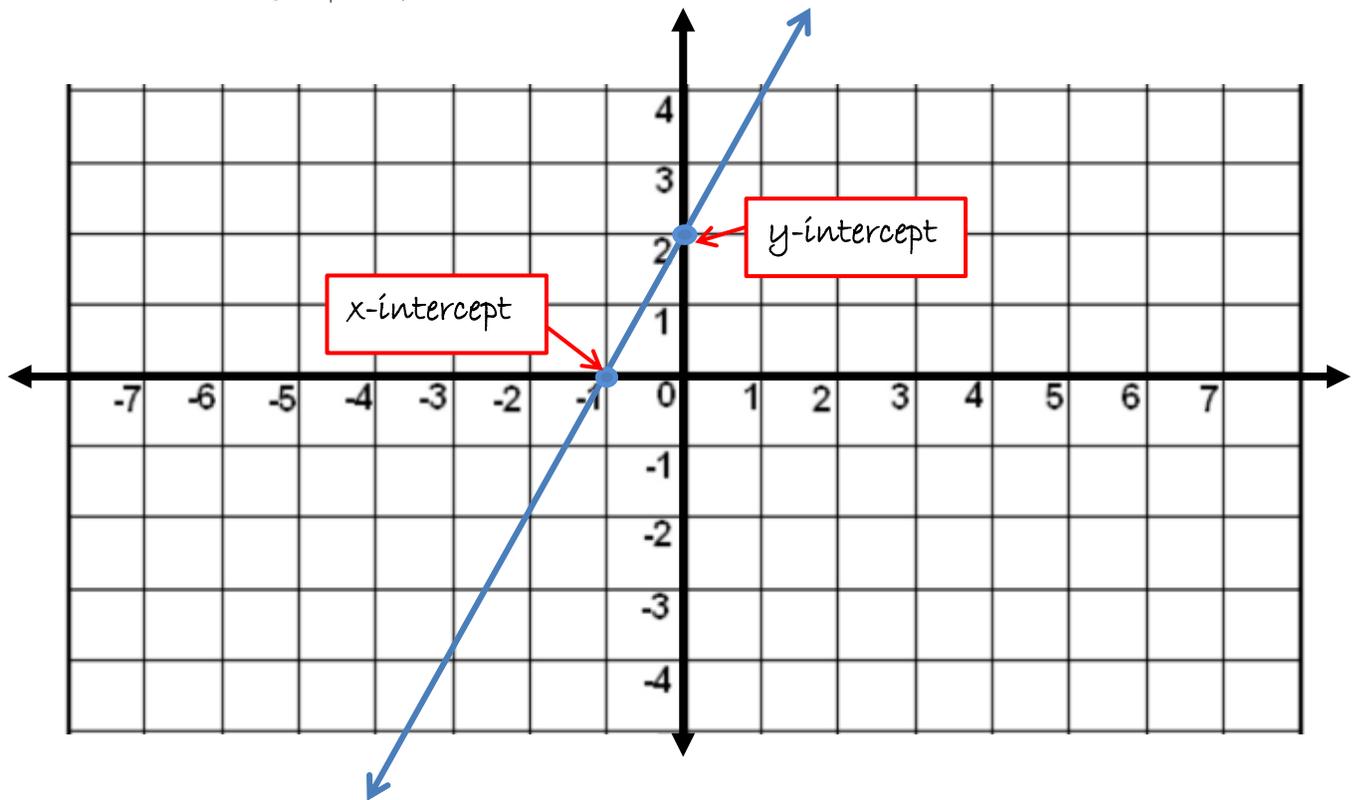
Example 2:

Graph the line $y = 3$ on the grid below.

x	y

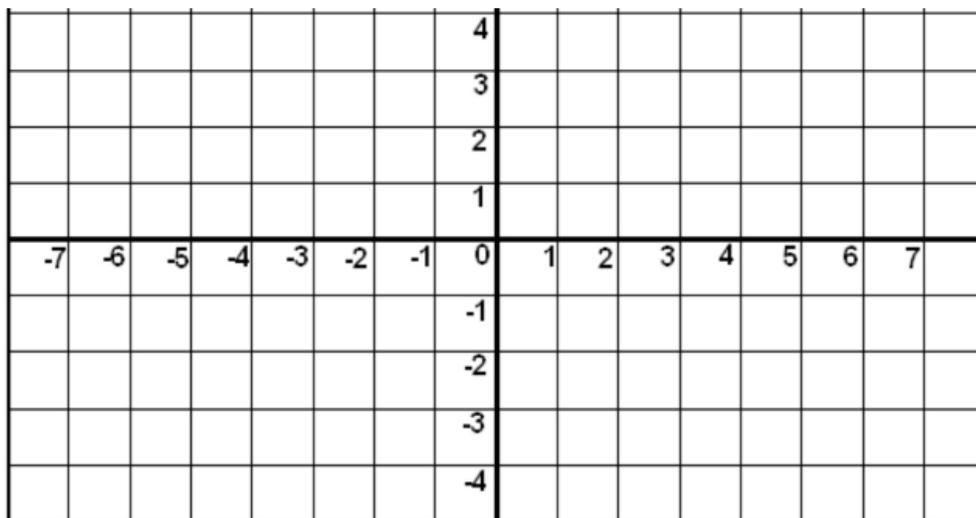NOTE: $y = 3$ means no matter what the x-value, y always equals **3**.

							4							
							3							
							2							
							1							
-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7
							-1							
							-2							
							-3							
							-4							

Example 3:

Graph the line $x = 2$ on the grid below.

x	y

NOTE: $x = 2$ means no matter what the y-value, x always equals **2**.

							4							
							3							
							2							
							1							
-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7
							-1							
							-2							
							-3							
							-4							

Example 4:

Graph the line $x - y = 3$ on the grid below.

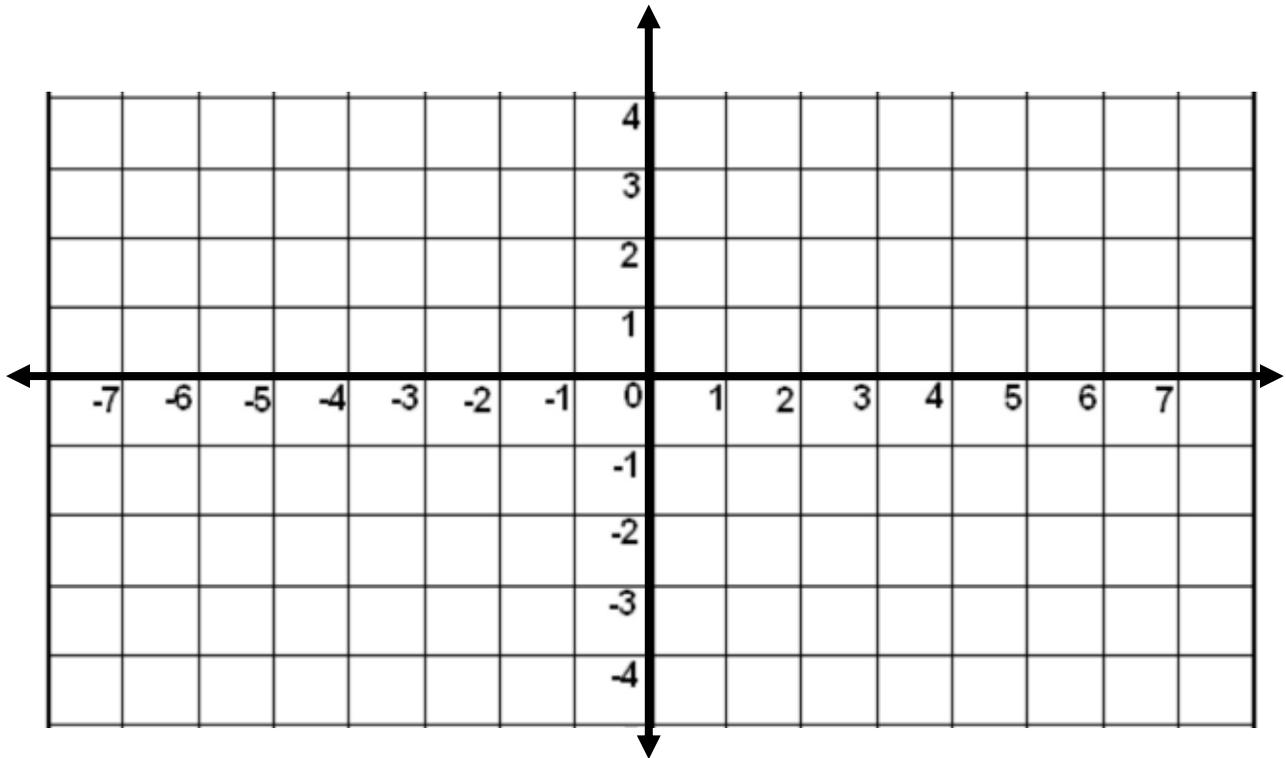| x	y
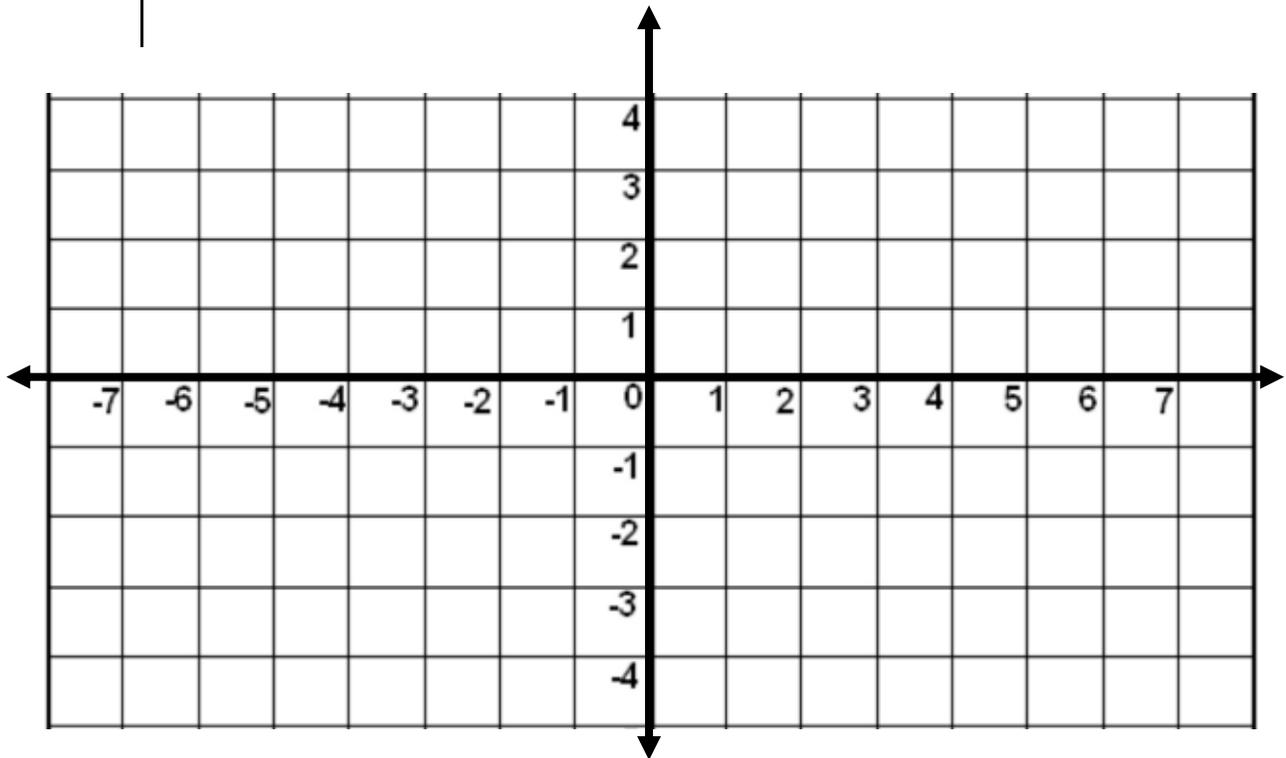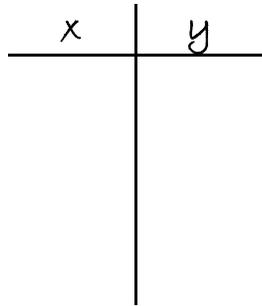
Graphing Linear Equations   Practice Problems

1. Graph the line

$$y = -\frac{1}{2}x + 2$$

2. What is the x-intercept of the line above? The y-intercept?